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MCGINN INTELLECTUAL PROPERTY LAW GROUP, PLLC
8321 OLD COURTHOUSE ROAD
SUITE 200
VIENNA, VA 22182-3817

EXAMINER	
MAKIYA, DAVID J	

ART UNIT	PAPER NUMBER
2885	

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12/23/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/521,943	SUEHIRO ET AL.	
	Examiner	Art Unit	
	David J. Makiya	2885	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 September 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29,34 and 36-38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-29,34 and 36-38* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 January 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Applicant's amendment filed 9/24/2008 has been entered.

Claim Objections

Claim 38 is objected to because of the following informalities: it is unclear as to how there is a "thickness corresponding to the end face" because the end face is merely a two-dimensional surface that does not have a thickness. The claims will be interpreted as best understood. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-3, 10-17, 19-23, 25-29 and 34-35 are rejected under 35 U.S.C. 103(a) as unpatentable over Smith et al. (US Patent 6,851,835) in view of Hecht (US Patent 6,871,993).

With respect to claims 1, 12, 29, and 36, Smith et al. teaches a light emitting apparatus, comprising a solid-state light emitting element 50; a power supply member 30 that supplies power to the solid-state light emitting element (Column 5, Lines 24-35); a reflection section 12 that is disposed opposite to a light extraction surface of the solid-state light emitting element to reflect light emitted from the solid-state light emitting element (Column 5, Lines 24-35); and a

heat radiation member 40 that is disposed with a heat radiation width in a back direction of the solid-state light emitting element; and an insulating layer 30 disposed between the power supply member and the heat radiation member (Figure 4), wherein the heat radiation member comprises a planar member disposed parallel to a light extraction direction of the solid-state light emitting element (Figure 4), the power supply member, which is separate from the heat radiation member, is secured to an end face of the planar member (Column 8, Lines 58-66), the solid-state light emitting element is mounted on the end face of the planar member (Figure 4; Column 8, Lines 58-66).

However, Smith et al. fails to teach the planar member is disposed parallel to a longitudinal direction of the power supply member, the material being aluminum, or a second planar member disposed perpendicular to the planar member.

Hecht teaches a light emitting apparatus comprising a solid-state light emitting element 16, a power supply section 26, a reflection section 12, a heat radiation member 28, and an insulating layer 26, wherein the heat radiation member comprises a planar member 30 disposed parallel to a light extraction direction and the planar member is disposed parallel to a longitudinal direction of the power supply member (Figure 1) and wherein the heat radiation member is made of an aluminum material (Column 2, Lines 45-51) and the heat radiation member further comprises a second planar member 20 disposed perpendicular to and intersecting the planar member (Figure 3; Column 2, Lines 60-67).

It would have been obvious and advantageous to one of ordinary skill in the art at the time of the invention to modify and reconstruct the light emitting apparatus of Smith et al. by rotating the planar member from the teachings of Hecht because aluminum is a "thermally

conductive and rigid material…to dissipate heat" (Hecht; Column 2, Lines 45-51), the second planar member is "located within the focal region" (Hecht; Column 2, Lines 58-67) to ensure proper reflection patterns and is also a light reflecting material and since it has been held that rearranging parts of a prior art structure involves only routine skill in the art. *In re Japikse*, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950).

With respect to claim 2, 3, and 11, Smith et al. teaches a light emitting apparatus, comprising a solid-state light emitting element 50; a power supply member 30 that supplies power to the solid-state light emitting element (Column 5, Lines 24-35); a reflection section 12 that is disposed opposite to a light extraction surface of the solid-state light emitting element to reflect light emitted from the solid-state light emitting element (Column 5, Lines 24-35); a heat radiation member 40 that is disposed with a heat radiation width in a back direction of the solid-state light emitting element; an insulating layer 30 disposed between the power supply member and the heat radiation member; and a case 10 in which the reflection section and the radiation member are placed and which externally radiates heat to be transferred from the heat radiation member (Figure 7), wherein the heat radiation member comprises a planar member disposed parallel to a light extraction direction of the light emitting apparatus (Figure 4), and the power supply member, which is separate from the heat radiation member, is secured to an end face of the planar member (Column 8, Lines 58-66), the light source section is mounted on the end face of the planar member (Figure 4; Column 8, Lines 58-66).

However, Smith et al. fails to teach the planar member is disposed parallel to a longitudinal direction of the power supply member or the material being aluminum.

Hecht teaches a light emitting apparatus comprising a solid-state light emitting element 16, a power supply section 26, a reflection section 12, a heat radiation member 28, and an insulating layer 26, wherein the heat radiation member comprises a planar member 30 disposed parallel to a light extraction direction and the planar member is disposed parallel to a longitudinal direction of the power supply member (Figure 1) and wherein the heat radiation member is made of an aluminum material (Column 2, Lines 45-51).

It would have been obvious and advantageous to one of ordinary skill in the art at the time of the invention to modify and reconstruct the light emitting apparatus of Smith et al. by rotating the planar member from the teachings of Hecht because aluminum is a "thermally conductive and rigid material…to dissipate heat" (Hecht; Column 2, Lines 45-51) and is also a light reflecting material and since it has been held that rearranging parts of a prior art structure involves only routine skill in the art. *In re Japikse*, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950).

With respect to claim 10, Smith et al. teaches the light emitting apparatus wherein the case comprises a high reflectivity surface to reflect the light (Column 5, Lines 36-46).

With respect to claim 13, Smith et al. teaches the light emitting apparatus wherein the heat radiation section comprises a heat radiation support 40 that comprises a high thermal conductivity material and transfers to the heat radiation member heat generated from the solid-state light emitting element (Column 8, Lines 58-67), and a heat radiation plate 30 that transfers the heat through the heat radiation support (Column 8, Lines 58-67).

With respect to claim 14, Smith et al. teaches a light emitting apparatus, comprising a solid-state light emitting element 50; a power supply member 30 that supplies power to the solid-

state light emitting element (Column 5, Lines 24-35); a reflection section 12 that is disposed opposite to a light extraction surface of the solid-state light emitting element to reflect light emitted from the solid-state light emitting element (Column 5, Lines 24-35); and a heat radiation member 40 that is disposed with a heat radiation width in a back direction of the solid-state light emitting element; and an insulating layer 30 disposed between the power supply member and the heat radiation member, wherein the power supply member is formed with a width in the back direction of the solid-state light emitting element (Figure 4), wherein the heat radiation member comprises a planar member disposed parallel to a light extraction direction of the light emitting apparatus (Figure 7), and the power supply member, which is separate from the heat radiation member, is secured to an end face of the planar member (Column 8, Lines 58-66), the solid-state light emitting element is mounted on the end face of the planar member (Figure 4; Column 8, Lines 58-66).

However, Smith et al. fails to teach the planar member is disposed parallel to a longitudinal direction of the power supply member or the material being aluminum.

Hecht teaches a light emitting apparatus comprising a solid-state light emitting element 16, a power supply section 26, a reflection section 12, a heat radiation member 28, and an insulating layer 26, wherein the heat radiation member comprises a planar member 30 disposed parallel to a light extraction direction and the planar member is disposed parallel to a longitudinal direction of the power supply member (Figure 1) and wherein the heat radiation member is made of an aluminum material (Column 2, Lines 45-51).

It would have been obvious and advantageous to one of ordinary skill in the art at the time of the invention to modify and reconstruct the light emitting apparatus of Smith et al. by

rotating the planar member from the teachings of Hecht because aluminum is a "thermally conductive and rigid material…to dissipate heat" (Hecht; Column 2, Lines 45-51) and is also a light reflecting material and since it has been held that rearranging parts of a prior art structure involves only routine skill in the art. *In re Japikse*, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950).

With respect to claim 15, Smith et al. teaches the light emitting apparatus wherein the power supply member comprises a metallic thin film and is disposed with a width in the back direction of the solid-state light emitting element and is integrated with the heat radiation member while being insulated from the heat radiation member (Figure 4).

With respect to claim 16, Smith et al. teaches the light emitting apparatus wherein the power supply member comprises a metallic thin film and is sandwiched through an insulator between a plurality of heat radiation plates to compose the heat radiation member (Figure 4).

With respect to claim 17, Smith et al. teaches the light emitting apparatus wherein a spectrum light with a plurality of region wavelengths is radiated form the solid-state light emitting element or from the periphery of the solid-state light emitting element (Column 10, Lines 2-10).

With respect to claim 19, Smith et al. teaches the light emitting apparatus wherein the heat radiation section has the heat radiation width that is three times or more its thickness (Figure 7).

With respect to claim 20, Smith et al. teaches the solid-state light emitting element has a width that is within five times that of the solid-state light emitting element (Figure 1A)

With respect to claim 21, Smith et al. teaches the light emitting apparatus wherein the heat radiation section comprises a shape that protrudes toward a bottom of the reflection surface (Figure 4).

With respect to claim 22, Smith et al. teaches the light emitting apparatus wherein the reflection surface opposite to the solid-state light emitting element comprises a solid angle of 2π to 3.4π strad (Figure 4).

With respect to claim 23, Smith et al. teaches the light emitting apparatus wherein the solid-state light emitting element turns on, but fails to teach the specific power of 1W or more.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the power level, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only ordinary skill in the art. *In re Aller*, 105 USPQ 233. In this case, the device turns on, therefore finding the optimum range of power involves only ordinary skill in the art.

With respect to claim 25, Smith et al. teaches the light emitting apparatus wherein the solid-state light emitting element comprises one of a plurality of solid-state light emitting elements (Figure 1A).

With respect to claim 26, Smith et al. teaches the light emitting apparatus wherein the light emitting apparatus further comprises a plurality of solid-state light emitting elements (Figure 1), and a plurality of heat radiation members, the heat radiation members corresponding to the plurality of the solid-state light emitting element (Figure 7).

With respect to claim 27, Smith et al. teaches the light emitting apparatus wherein the plurality of the solid-state light emitting elements generate a plurality of emission colors (Column 10, Lines 2-10).

With respect to claim 28, Smith et al. teaches the light emitting apparatus wherein the plurality of the solid-state light emitting elements generate emission colors of R, G, and B (Column 10, Lines 2-10 and Column 1, Lines 54-61).

With respect to claim 34, Smith et al. teaches the light emitting apparatus wherein the power supply member is insulated from the heat radiation member by the insulation layer (Figure 4).

With respect to claim 37, Smith et al. teaches the light emitting apparatus wherein the planar member comprises a front surface, a rear surface, and the end face, a surface area of the end face is smaller than a surface area of the front surface and the surface area of the end face is smaller than a surface area of the rear surface (Figure 7).

With respect to claim 38, as best understood, Smith et al. teaches the light emitting apparatus wherein the planar member has a width and thickness, the thickness corresponding to the end face, and wherein the width of the planar member is larger than a thickness of the end face (Figure 7).

Claims 4-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al. in view of Hecht as applied to claims 1 and 2, respectively, and further in view of Young (US Patent 6,672,741).

With respect to claims 4-9, Smith et al. in view of Hecht teaches the light emitting apparatus as described above with an inorganic material board 13 on which a conductive pattern is formed to supply power to the solid state light emitting element, but fails to teach the solid-state light emitting element is packaged such that the solid-state light emitting element is sealed with a light transmitting material.

Young teaches a light emitting apparatus comprising solid-state light emitting element 12, a power supply section 14, and a reflection section 11, wherein the solid-state light emitting element is packaged such that the solid-state light emitting element is sealed with a light transmitting, inorganic seal material 13 comprising glass (Column 3, Lines 1-2) and a refractive index of 1.55 or more (Column 2, Line 49-Column 3, Line 2).

It would have been obvious and advantageous to one of ordinary skill in the art at the time of the invention to reconstruct the light emitting apparatus of Smith et al. in view of Hecht by adding the seal material from the teaching of Young because the "light emitting diode 12 is fixed securely to the front cover" (Young; Column 2, Lines 49-59) to protect the light source (Young; Figure 2), but without limiting the light because the "cover is made up of a transparent material" (Young; Column 1, Lines 63-65).

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al. in view of Hecht as applied to claim 17, and further in view of Lowery (US Patent 5,959,316).

With respect to claim 18, Smith et al. in view of Hecht teaches the light emitting apparatus as described above, but fails to teach a phosphor disposed on the periphery of the solid-state light emitting element.

Lowery teaches a light emitting apparatus comprising a solid-state light emitting element 18 and a phosphor 52 disposed on the periphery of the solid-state light emitting element.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the light emitting apparatus of Smith et al. in view of Hecht by adding a phosphor from the teachings of Lowery because a phosphor "provides a final combination of light which appears as white to the human eye" (Lowery; Column 1, Lines 21-27). Furthermore, it would be advantageous to reconstruct the device with the phosphor because it would "provide a constant, uniform white light LED" (Lowery; Column 1, Lines 46-52).

Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al. in view of Hecht as applied to claim 1, and further in view of McCullough et al. (US 2004/0252502).

With respect to claim 24, Smith et al. in view of Hecht teaches the light emitting apparatus as described above, but fails to teach the material of the reflection section.

McCullough et al. teaches a light emitting apparatus comprising a solid-state light emitting element 46, a power supply section 45, a reflection section 12, and a heat radiation member 40, wherein the reflection section is made of a resin material (Paragraph 25).

It would have been obvious and advantageous to one of ordinary skill in the art at the time of the invention to reconstruct the reflection section of Smith et al. in view of Hecht with the resin material from the teachings of McCullough et al. because resin is a "thermally conductive" (McCullough et al.; Paragraph 26) and is also a "dimensionally stable and have high impact strength" (McCullough et al.; Paragraph 25).

Response to Arguments

Applicant's arguments filed 9/24/2008 have been fully considered but they are not persuasive.

In response to applicant's argument that "no solid state light emitting element is shown," the applicant is referred to Column 5, Lines 40-43 of the Smith et al. reference, which states: "The PC board has a lateral dimension or width W and is mounted such that *LEDs* secured to the PC board have their *area of light emission positioned coincident with the focal point 20*." Therefore, when the Smith et al. reference in Figure 4 only shows reference number 20, it is because the reference has already stated that the solid state light source has the area of light emission that is located *exactly* at that point. Furthermore, the configuration of the reflector clearly shows that the light must be located at the focal point 20 "to collimate light into planes 70 parallel to axis A" (Column 7, Lines 35-40). Therefore, the reference meets the limitations as claimed.

In response to applicant's argument that Smith et al. does not teach "that light emitted form the solid-state light emitting element and then reflected on the reflection section can be prevented from being shaded or blocked by the heat radiation member," a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. Furthermore, Figure 4 and Column 7, Lines 35-40 of Smith et al. shows that by collimating the

light, the light is not blocked or shaded by the heat radiation member. Therefore, the reference meets the limitations as claimed.

In response to applicant's argument that Hecht does no teach the "planar member is disposed parallel to a longitudinal direction of the power supply member," the applicant is referred to Figure 1 and Column 2, Lines 39-45 of the Hecht reference. Figure A has been added below to show the light sources are mounted along the length of the surface 26 to create a longitudinal direction. As Figure A also shows, the planar member 30 extends along the length of the core 28 such that they are parallel to one another. Therefore, the reference meets the limitations as claimed.

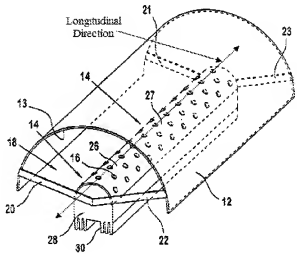

Figure A: Longitudinal direction of Hecht

In response to applicant's argument that "the examiner fails to meet the burden of proof," a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed

invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. Furthermore, in this case the device turns on, therefore finding the optimum range of power involves only ordinary skill in the art.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Moisel (US Patent 7,281,823) teaches a light emitting apparatus with an opposite reflection surface and a planar heat radiation member.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David J. Makiya whose telephone number is (571) 272-2273. The examiner can normally be reached on Monday-Friday 7:30am - 4:00pm (ET).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jong-Suk (James) Lee can be reached on (571) 272-7044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Hargobind S Sawhney/
Examiner, Art Unit 2885

/DJM 12/18/08